

“Our Brain & the Power of Self-Calming Habits”



**Trans4m Center's
2nd Annual
Summer Symposium:
“Courageous Heroes”**

June 27 & 28, 2019
Double Tree – Campbell Centre
Dallas, Texas

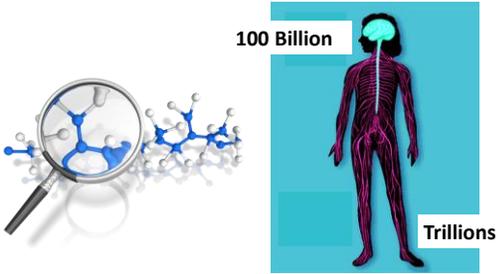
Presenter:
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Our Brain

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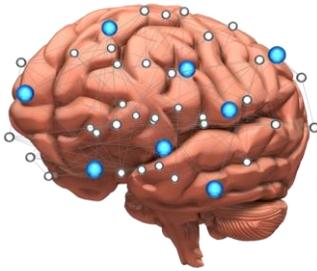


100 Billion

Trillions

At birth, we arrive with 100 billion nerve cells called neurons in our brain, and trillions of neurons in the rest of our body.

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Of all the neurons available at birth, only 25% of
are connected into networks, i.e., working.

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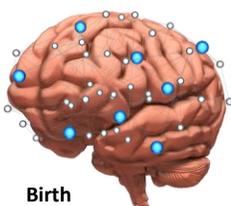
Eat, sleep, cry, poop, be
angry, happy, afraid, etc.

What can a baby do?

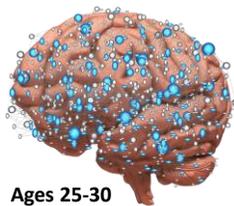
Nature - - our DNA -
prewires the 25% of
neurons that are
working at birth.

The 75% of neurons responsible for
everything a baby **cannot** do are
waiting to be **networked**.

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Birth



Ages 25-30

Our experiences network the waiting 75%.

Nature gives us 25 years to network/connect
the other 75% and build a basic brain.

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How our brain develops...

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Humans learn & develop by:



Repeated & Consistent

- Exploration
- Observation
- Patterns
- Guided Experience



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Automatic Way "in":



Mirror Neurons
"Observer Neurons"

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Anything that is modeled



Mirror Neurons

“is automatically stored...”

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If it is repeated consistently



a pattern is likely to form.

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It takes at least 25 years to build a
BASIC BRAIN.

DNA & Experience Partner in the Building



**DNA =
Nature:**

Architect (Plan) and
Contractor (Schedule)



Materials:
Nerve Cells
(Neurons)



**Builders =
Nurture**

**# 1 job is to help
us get calm**

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What causes the opposites of CALM...

Tension, Distress, Anxiety & Trauma?

Adversity...

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Adversity can create tension, discomfort, distress, anxiety, depression & Trauma...

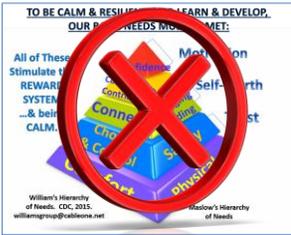
Adversity includes these Situations & Conditions

- Poverty
- Hunger/Food Insecurity
- Homelessness
- Substance Abuse
- Parental Substance Abuse
- Parental Mental Illness
- Sibling in Prison/Jail
- Military Deployments
- Deportations
- War

2012 U. S Atty General.
 2012 Children's Health Survey

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In each of these situations, it is likely



that one or more of our basic needs will go UNMET.

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Trauma:

when the demands of an adversity* exceed one's ability to cope in a personally & socially healthy way.

*situation, condition, event, environment, or relationship



One is overwhelmed.

SAMHSA, 2016

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If people had calming coping habits - to prevent & overcome Distress & Anxiety



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People would NOT be as overwhelmed & not as traumatized - - and therefore would be psychologically, behaviorally & physically healthier...

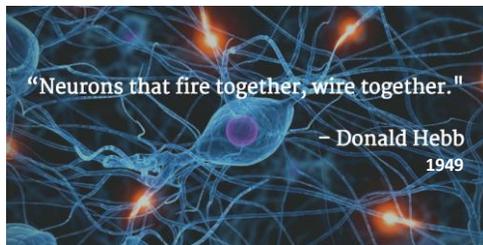


Neuroscience has made us re-examine **stress** in all its forms and think and talk about it differently.



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**"Stress" is NOT bad...Stress is Stimulation.
Stimulation is LIFE!**



"Neurons that fire together, wire together."

- Donald Hebb
1949

**Experience Stimulates – Wires - Networks.
Stimulation Changes Our Neural Structure.**

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Our Automatic response to anything adverse, uncomfortable or difficult is some form of **STRESS.**



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Harvard's Three Levels of STRESS:

Positive

Tolerable

Toxic

<p>POSITIVE = Something New: Focused Attention or Tension with POSITIVE COPING HABITS & SUPPORT = LEARNING + DEVELOPMENT</p>	<p>TOLERABLE = ADVERSITY but with POSITIVE COPING HABITS & SUPPORT = MANAGEABLE DISTRESS + LEARNING + DEVELOPMENT</p>	<p>TOXIC = ADVERSITY but with NO POSITIVE COPING HABITS OR SUPPORT = ANXIETY & TRAUMA + Less Learning & Development</p>
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Science shows we repeat what
we don't repair...

Our Goal:

MITIGATING.....
 Reducing
IMPACT

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To Mitigate =

alleviate, reduce, diminish, lessen, weaken, lighten,
 attenuate, take the edge off,
 allay, ease, assuage, palliate, relieve, tone down.

Make less severe, serious, painful or harmful.



UNmitigated



Mitigated

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Increasing a person's ability to cope...
 ...mitigates the impact...



Timely support & POSITIVE COPING HABITS
 for getting/staying CALM are essential
 Protections from Trauma's impacts.

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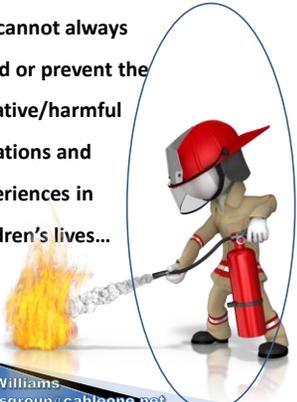
Most Importantly...

One who mitigates does NOT ADD
 to the *tension, distress, anxiety,*
panic or trauma already present in
 clients' situations, conditions,
 relationships, and environments.



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We cannot always
 avoid or prevent the
 negative/harmful
 situations and
 experiences in
 children's lives...



...but we can provide
PROTECTION that
MITIGATES the risks
 and reduces the
 negative/harmful
 effects and impacts.

Think of children as
 FIREFIGHTERS...
Equip them, **Train**
 them, **Support** them.

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Science's Bottom Line:

Humans **CANNOT**: Behave Pro-Socially;
Listen, Focus, Concentrate, Remember;
Think Rationally, Self-Regulate, Be Resilient,
Patient, or Courteous; Have Compassion or
Empathy; Recover from Trauma or other
Behavioral Health Problems, or Stay
Psychologically or Physically Healthy Until
They Can **FIRST** Feel



CALM.

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NIH: 2001, 2004, 2009,
2011, 2014, 2017.

And...

**NEVER . . .
in the history of
calming down
has anyone ever
calmed down by
being told to
calm down.**

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Unknown

And...we know that...

**Teaching people
what not to do
DOES NOT
teach them what to do.**

“NOT never equals WHAT.”



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Karen Williams, 2011

Behaviors & Habits

- **All behavior has a purpose.**
- Behavior is an **observable outside sign** or indication of **what is going on inside an individual.**



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How did we know?



We assessed his/her
BEHAVIOR.

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Protective behaviors are driven by our automatic instincts.

Automatic Behaviors are driven by powerful, primitive survival instincts that we have at birth, and which are strengthened through distressful experiences.

These are designed to be protective, but they can also be harmful.

But, we have been also given the power to form **HABITS** to offset these automatic instinctive behaviors.

We have the power to learn & practice self-calming COPING HABITS

that are as powerful as our behaviors driven by our automatic instincts.

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The Science:

It's not what happens to us that causes us problems, it is how we *respond*.



Nature pre-wires our *automatic fight, flight & freeze* responses.

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DNA wires our **AUTOMATIC, PRIMITIVE BEHAVIORS.**
When we are **DISTRESSED**, we **OVER-REACT.**



FEAR – Discomfort – Distress – Anxiety – Trauma
(Frustration, Anger, Helplessness, Hopelessness...)

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But...that's not all...

Our behavior is influence by our **TEMPERAMENT**, i.e.,

our pre-wired, automatic sensitivity to distress...

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Temperament...
**OUR PRE-WIRED
 AUTOMATIC
 SENSITIVITY TO
 DISTRESS....**

*Our temperament,
 which is pre-wired
 by our DNA, is
 obvious at birth...*



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Temperament = Pre-Wired Sensitivity to Distress,

SAME Situation:	Mellow	Sensitive	Highly-Sensitive	Hyper-Sensitive
Different AUTO Reactions				
FIGHT	Concerned/ Frustrated	Worried/ Weary	Anxious/ "Snarky"	Angry Hateful/ Hurtful
FLIGHT	Rides It Out	Daydreams for Escape	Absent & "Sent Out"	Truant & Runs Away
FREEZE	Quiet & Pensive	Hesitating Halting	Hunkering Hiding	Shutdown Self-Harm

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Hunger, fatigue, being upset "cranks it up"...



Mellow	"Sensitive"	Highly Sensitive	Hyper-Sensitive
			
Concerned/ Frustrated	Worried/ Weary	Anxious/ "Snarky"	Angry Hateful/ Hurtful*

Harmful

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CANNOT DELAY GRATIFICATION = INCREASES RISKS

- Always seeking to meet **IMMEDIATE NEEDS**
 - Now!
 - Make it go away!
 - Make it stop!
 - Anything that works!
 - Don't Care About Tomorrow
 - YOLO!
 - Fatalistic!!
 - Exhausted
 - No "real jollies" – fakes are available
 - No stress management/coping skills!

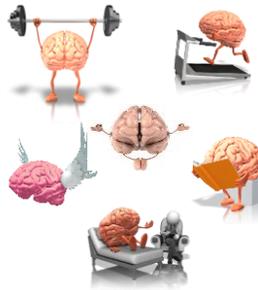


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40

- Emotional Health
- Social Health
- Physical Health
- Behavioral Health
- Cognitive Health

**Stress Management
& Mental Health
Habits & Support**



VS.

**ADVERSITY & DISTRESS,
ANXIETY & TRAUMA**

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"Mental Health is a state of **well-being**, which means that we have:

- **Skills/habits to deal with normal stresses of daily life;**
- **The social support and personal habits to cope with very distressful situations;**

We can also:

- **Work productively and fruitfully with others *in spite of our differences;***
- **Make a contribution to our family and community**
- **Realize own potential**



World Health Organization

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Mental Health includes:

- Biology - DNA, **temperament, automatic stress responses, and chemical makeup;**
- Psychological/Affective /Emotional conditions,
- **Behavior and Behavioral HABITS**
- Cognitive Health

Behavioral Health, examines how our **HABITS** impact our overall physical and mental wellbeing.

“We first make our **HABITS**, and then our **HABITS** make us.”
F. M. Alexander

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“Stress exposure is one of the greatest risk factors for psychiatric illnesses like **Anxiety, Major Depressive Disorder and Posttraumatic Stress Disorder (PTSD).**

However, not all individuals exposed to stressors develop affective disorders.”



Stress Resilience, the ability to experience stress **without developing persistent psychopathology**, varies from individual to individual.

Enhancing **Stress Resilience** in at-risk populations could potentially protect against stress-induced psychiatric disorders.”

Rebecca Brachman, Neuroscientist & TED Fellow, March, 2019

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Stress Resilience is the active **biological process** that allows us to bounce back after stress.

Similar to if you have a cold and your immune system fights it off.

An **“Insufficient Resilience”** in the face of a significant enough stressor, can result in a psychiatric disorder, such as anxiety, depression, as well as the many other effects of trauma.

“Resilience Enhancers” can protect against both biological stressors, like stress hormones, and social and psychological stressors, like bullying and isolation, etc.



Rebecca Brachman, Neuroscientist & TED Fellow, March, 2019

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RESILIENCE

[ri-zil-yuhns]

The power to be able to recover readily from adversity or challenge.

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Unmitigated distress, anxiety and trauma can create future behavioral health disorders.

National Research Council and the Institute of Medicine.

2009 Landmark Report

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MAJOR FINDINGS:

- Childhood & adolescent **STRESS** is linked to clusters of **preventable EMOTIONAL and BEHAVIORAL** health problems.
- Most mental, emotional and behavioral health disorders have their roots in **CHILDHOOD & ADOLESCENCE** – *when the brain is still building/developing.*

75% of MEB disorders in US begin prior to age 24.

➤ **50% begin PRIOR TO AGE 14!**

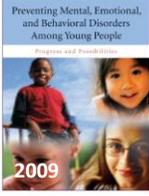
Symptoms show up 2-4 (up to 7) years before reaching criteria for a disorder!

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The "AHA": When behavioral signs and symptoms of *distress, anxiety, and trauma* are ignored, dismissed, or punished...



...behavioral symptoms are likely **to escalate** until they reach the criteria for a behavioral health disorder.

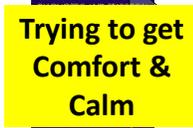


The Escalation is Preventable.

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Children and Youth are Most At Risk for the Following Emotional and Behavioral Health Disorders

Youth are FAR MORE at RISK for:



- Anxiety Disorders
- Depression/Mood Disorders
- PTSD/Child Traumatic Stress
- Conduct Disorder
- Oppositional Defiant Disorder
- Obsessive/Compulsive Disorder
- Eating Disorders
- Substance Use Disorders
- Self-Harm Disorders

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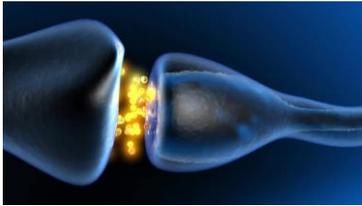
Our Bio-Chemistry influences everything about us.



We have the power to influence our chemistry and our homeostasis.

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Neuron to Neuron:



Our bio-chemicals pass messages.
It's our own B-Mail.

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We have two Basic Sets of Bio-Chemicals



Those that **SPEED** us
up...

**Adrenaline
& Steroids...**

Released
AUTOMATICALLY
*when our needs are
NOT met.*

Those that **CALM** us
down...

The "Fabulous 5"...

Released
*when our needs are
met, i.e., when our
REWARD SYSTEM
is working.*

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Survival/Speed Bio-chemicals =

Epinephrine, Adrenaline & Steroids

*Just enough gives you energy & can save your life;
too much can put you OUT OF CONTROL!*



Epinephrine=
ATTENTION,
FOCUS &
EXCITEMENT



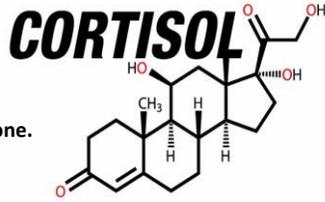
ADRENALINE=
Fight, Flight
or Freeze
Emergencies
ONLY!



CORTISOL=
Our Body's
STERIODS
Short-term Use
ONLY!

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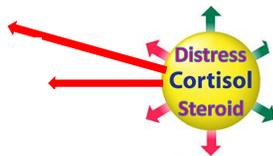
Anytime a situation or condition causes us tension, distress, anxiety, etc. our body automatically releases a natural steroid, called...



hydrocortisone.

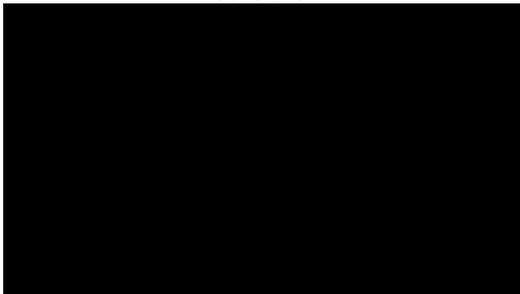
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NIH



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How Too Much Cortisol Affects the Adult Brain



<https://www.youtube.com/watch?v=bchj8uF8j2k>

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When distress is not relieved, the amount of Cortisol (Stress Hormone) becomes **"TOXIC"**, i.e., it re-routes energy away from the neurons in the PFC & the Hippocampus & they shrink.

"Toxic" means that the discomfort or distress has remained long enough to interrupt the neural development of the PFC & Hippocampus

Toxic Stress Changes Brain Architecture

Normal
Typical neuron—many connections

Toxic stress
Damaged neuron—fewer connections

Disrupted (Connections Shrink)

Prefrontal Cortex and Hippocampus

Sources: Dudley et al. (2004); Bock et al (2005)

Center on the Developing Child HARVARD UNIVERSITY

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Multiply by 10...

Because youth are all... their brain... sets the... fold when you... about a 10-20 year old's brain...

Teens are far more sensitive to distress...

X10

Dr. Robert Sapolsky, Stanford University

Karen Williams
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For adolescents under the same distress...

the dose of the Distress Hormone Cortisol is 2 to 5 times MORE than that of adults & it stays 2 to 5 times LONGER!

ALARM ALARM

This helps explain why distress can be so damaging to teen brains.....and why they trouble "calming down" after a distressful episode.

Dr. Russell Romeo, Rockefeller University

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Science Says:
“Start with the Body”

Harvard Medical School,
2009

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Not everyone has experienced being calm...



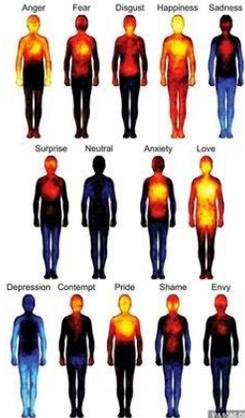
Do I know what it feels like to be calm?
Can I produce a feeling of CALM at will?

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We are
85% Sensations (Body)
 &
15% Emotions (Mind)
 both of which are called
“FEELINGS.”

Dr. Lauri Nummenmaa, Finland's
Aalto University's School of Science

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How can we tell when we are CALM?

	Regular Heartbeat		Sense of Stillness, Quiet, Restful Alertness, Contentment, Satisfaction, Ease, At Peace
	Open Esophagus & Deep Regular Breathing		
	Relaxed Muscles		
	Relaxed Digestion & Elimination		

**Trust/
Confidence**

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How can we tell when we are Agitated?

	Rapid Heartbeat		Sense of Distress, Tension, Anxiety, Nervous, Hungry, Sleepy, Tired, Exhausted & Dis-ease
	Short, Rapid, Labored Breathing, Or Holding Breath		
	Muscles Tense		
	Digestive & Elimination Upsets		

**Fear/Lack of
Confidence**

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**The Most Important
THREE**



Things Youth Must Learn...

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